

# Combining Advanced Learning Technologies in an Immigrant Educational Program

Ellen Schuurink  
ITpreneurs CSI  
Weena 324-326  
3012 NJ Rotterdam, NL  
0031 (0) 10 71  
Ellen.Schuurink@itpreneurs.nl

Maartje de Vries  
User System Interaction  
Eindhoven University of Technology  
P.O. Box 513  
5600 MB Eindhoven, NL  
M.H.E.D.Vries@tue.nl

## ABSTRACT

This article describes an unconventional educational program for immigrants entering the Dutch society, in which e-learning, gaming techniques, classroom activities and an outdoor program have been combined to develop a blended program. The introduction of an integration exam for immigrants in the Netherlands lead to the creation of (digital) educational courses. A recent change in the key expected learning outcomes in the immigration education made it very relevant to begin using gaming technologies and virtual community techniques as part of the courseware. This article describes the development of a blended educational program for immigrants called TiN, with a special focus on the use of multimedia and technology enabled interaction possibilities in the courseware.

## Categories and Subject Descriptors

K.3.1 Computer Uses in Education

## General Terms

Documentation, Design, Theory.

## Keywords

e-learning, games, virtual world, SLA, immigrant education

## 1. INTRODUCTION

### 1.1 Immigrant Education

In the Netherlands the New Civic Integration Act came into effect in the beginning of 2007. This Act states that all immigrants between the age of 16 and 65 years old, and that have the permission to reside long term in the Netherlands, are required by law to integrate in the Dutch society. To fulfill this requirement, immigrants need to successfully pass an integration exam. From 2009 onwards, educational programs which prepare the immigrants for the exam will have dual objectives, combining both integration and participation as learning objectives. The

introduction of this Act and because the exam is administered electronically, publishers were invited to develop courseware in which self paced e-learning plays a large role. In this way, students are able to prepare themselves not just in terms of content, but also become comfortable to take the electronic exam. These new training programs which aim at preparing students for the integration exam, are excellent examples of blended courseware, because advanced learning technologies have been widely used. Several publishers have included video, e-learning modules and an exam preparation guide. For example, Nieuwe Buren (New Neighbors) includes a multimedia program and an exercise book that is used in classrooms. Another immigrants training program is Kleurrijker (Colorful). This program includes a book with exercises, a website with e-learning and coaching practices. In this article we will analyze the immigrant educational courseware called Thuis in Nederlands (TiN, meaning 'At Home in Holland') in more detail. TiN includes the largest variety of multimedia and interaction possibilities. TiN was developed by ITpreneurs in 2008. Next, we will take a more specific look into the objectives of the immigration courseware and the characteristics of the students that have influenced the development of TiN.

### 1.2 Objectives

The objective of immigrant education is to learn the Dutch language and to learn about the Dutch society (see Cakir [7]), for the importance on cultural awareness in foreign language learning). With the TiN courseware, the immigrant will be tutored using e-learning, television, classroom, coaching, an exam preparation guide and practical assignments. These practical assignments are outdoor activities through which the immigrant has to practice basic conversations, basic writing skills, and take part in the Dutch social life.

The objective for participation is to become an active citizen, that is, being part of the labor market or becoming active in another manner, like volunteer work. This active role of immigrants leads to social inclusion, which is necessary for the society and the economy [6][26]. In addition, a good social network and sufficient social support have powerful effects on physical and mental health [3]. For the participation objective, TiN contains a virtual neighborhood, a participation game, a participation guide and a measurement tool.

Permission to make digital or hard copies of all or part of this work for personal or classroom use is granted without fee provided that copies are not made or distributed for profit or commercial advantage and that copies bear this notice and the full citation on the first page. To copy otherwise, or republish, to post on servers or to redistribute to lists, requires prior specific permission and/or a fee.

Conference '04, Month 1–2, 2004, City, State, Country.

Copyright 2004 ACM 1-58113-000-0/00/0004...\$5.00.

### 1.3 Context

When developing courseware for immigrants, designers should be aware of distinguishing characteristics of the target audience. First of all, since they are adults, lessons from pedagogy and andragogy influence the didactics. According to Knowles [17] the andragogical model is based on five assumptions: self-concept, experience, readiness to learn, orientation to learning and motivation to learn. In immigrant education this andragogical model is applied to the profiles of the immigrants. The profile determines the type of the course; immigrants who are likely to get a job will learn the language and skills that apply to a working environment. Next to that, the caregivers will be taught in the context of raising children, school and health. This makes adults more engaged in learning, because they are able to relate to the content [9].

Besides using a contextual approach, the test-taking skills should be exercised. Adults have less test-taking skills opposed to children [20]. This makes adults perform worse on tests if they feel time pressure. In addition, some students have anxiety towards learning, because they have been granted little or none education in their native country. Other students have been absent from school for a very long time, which makes it necessary to create an easy, informal and friendly learning environment (DePaula in [17]). The courseware can contribute to this in making the content relate to real-life experiences. This is especially important for non-educated students because they identify themselves with their experience, not with their education.

The instructor and courseware should also take into account the cultural background of the student. The morale and roles can be different and students can vary in socialization techniques. A more psychological burden is the loss of identity, the feeling of isolation because of the language barrier (DePaula, in [17]). In addition, colors and symbols can have an under-valued, unaware religious or cultural meaning. Besides this, other influences on the proficiency of second language learning are the attitude, motivation, social context, social-cultural milieu and the educational level of the student [22].

TiN is specially designed for poorly-educated people and people who are not used to working with computers, taken into account all above mentioned characteristics. Therefore, the course uses a variety of media, including video, pictures and animations, to support the accessibility to this target audience. The courseware increases digital literacy and motivates the immigrants to use the computer in everyday life to develop new social and economic opportunities. Next, the effectiveness of advanced learning technologies in language acquisition is discussed, as well as addressing the participation learning objectives.

## 2. Language Learning & ICT

Second language acquisition (SLA) is very similar for adults and children [18]. Specifically, it requires meaningful interaction in the target language, where the communication of the message is more important than the form of the utterance. The key determinant of language acquisition is frequency [10]. In addition, the most effective way of applying frequency is to present the learning objective in different contexts. The distribution principle of seven stated that a new word (or rule) should be repeated four

times the first time it is learned and should be repeated three times in following classes [8]. The distribution principle supports the context approach in language learning, which declares that the usage of language in communicative situations leads to acquisition. Herewith, interaction is seen as a significant factor in language acquisition [11] (see Doman [9] for a discussion on cognitive and contextual approaches in language learning).

The utilization of multimedia makes it easier to repeat words in different contexts. Multimedia can enliven the content but also provides interaction possibilities and can make systems more intelligent [14]. An intelligent system is able to integrate and process different types of information, meaning that the content can be personalized. Because multimedia and interaction can have different interpretations, we will now discuss the different (multi)media for language learning in TiN, followed by some effects of interaction.

In this article the concept multimedia is used as any combination of text, art, sound, animation, and video delivered by a computer [25]. In contrast to other multimedia programs, the multimedia in TiN is connected throughout the whole courseware. The first channel which is used to introduce the vocabulary is television. By means of a special developed television soap the student will get information about Dutch habits, all presented in Dutch. One episode contains the target words for a specific topic. Besides the soap, the student can use modules in the e-learning to practice the words in many different ways. For example, the content authoring tool (CAT) of TiN contains 48 different methods which provide a large variety of exercises for the students, exposing them to the words. These exercises require input of the student, they are interactive and enliven with multimedia. Using multimedia has shown to have an advantage for listening comprehension and is indicated to enhance language learning as a result of the focus of attention, feedback and the monitoring of comprehension [5].

Interaction in an educational process implies that a series of interactions occur between the instructor and student, or between student and other students, or between student and the computer [24]. The purpose of interactions is to make the students think and encourage a more thoroughly processing of the content. Interaction plays an important factor in online and offline learning, because it helps the student control the propositional content [10]. This means that students can choose their own topic to learn about. While in the modules of the e-learning the topics are limited to the learning objectives, in conversations with the instructor or other students any topic is open for discussions. Chatting with classmates should be stimulated because students find it easier to chat with people with the same proficiency [16]. Moreover, online chatting has this advantage as well; therefore we will have a closer look at online chatting in the next paragraph.

## 3. PARTICIPATION & ICT

Participation and integration are intertwining concepts. Participation means being part of and taking part in the society. Integration is the process where the immigrant adapts to the host society and where it is accorded equal rights with the rest of the community. Hence, participation can be seen as the goal and the method to successful integration. For this reason, the immigration education was extended with participation learning objectives. The complexity of the concept participation makes it difficult to be taught and to be measured. To get a more comprehensive

meaning of participation, we start with explaining existing methods for measuring participation.

Several instruments are available that claim to measure participation. Depending on the definition and purpose, all contribute to the empowerment, social network and work opportunities of the immigrant. For example, many municipalities in the Netherlands use the participation scale [13]. This instrument has six steps that go from isolation, social contacts, joining organized activities, unpaid work, paid work with assistance, to the final scale of paid work. This scale is useful for municipalities, but does not differentiate enough in courseware where small improvements need to be measured. For this reason TiN introduced a new and innovative concept called the network card. This card shows the participation level of the student on three dimensions: community service, social network and societal network. Participation is measured through the amount of activities a student takes part in, with a distinction between undertaking these activities independent or with assistance. The student will be rated several times through a questionnaire on each dimension which results in a score, which is the indicator of a student's participation level. Reasons why immigrants, or even natives, do or do not participate in organizational and other social activities are of interest. On an individual level, living alone and health issues decreases the level of (social) participation [19]. Besides this, the presence or absence of organizations, informal social networks and mutual trust are contextual determinants of level of participation [19]. Finally, the availability of information is a key component in social inclusion [6].

Improvement of the level of participation requires additional learning material than classroom activities and e-learning. Therefore, only a small part of participation can occur in a classroom, the other activities must occur outside the classroom but can be stimulated within a classroom setting. We stress that students need assistance before they start participating in the society. Firstly, students need empowerment; to get to know their own qualities and desires for using (social) institutions. In addition, empowerment means having knowledge about the current state and size of their social and societal networks and awareness of their (in)dependencies. Secondly, the students need to be aware of the participation possibilities. Thirdly, training of organizational and planning skills are required as well as to practice teamwork and improve presentation skills. The bases of these three steps start in TiN with classroom activities and the participation guide. Outdoor activities, like an internship, offer students an opportunity to get some work experience. This will improve the self confidence and it will train language skills in a work environment.

To instigate the need for participation a game was developed, because gaming can cause better learning through focus and pleasant rewards [21]. In addition, games can increase motivation in learning and attainment [23]. The game is a digital multiplayer board game in which students practice their knowledge of the Dutch society and the Dutch language by responding correctly to different offered scenarios. The scenarios confront immigrants with situations in which participation plays a crucial role. The scenarios are located at the sports centre, school, the neighborhood, the street and at the local community centre.

In addressing the presence and localization of organizations and social institutes an additional virtual world was developed. Virtual

worlds are networked, computer-simulated 3D virtual environments resembling the real world. Users can interact via their own graphical self representations known as avatars. 3D multiuser virtual worlds offer a venue for informal education, training and social interaction [4][27]. For these reasons a virtual world, tailored to the needs and desires of immigrant education, was developed: the virtual neighborhood.

The virtual neighborhood is a virtual environment in which the student can visit relevant institutes, like different schools, a job centre, town hall, a library and a health centre. These are institutions that are likely to be found in every municipality. When visiting these institutes, students can collect local information, as the presented information is linked to the personal zip code of the student and a real time map shows the coordinates of each institute. These local institutions can thus upload their own information like opening hours, scheduled activities in the agenda and advertisements. This way the overwhelming amount of data on the internet is bundled to relevant information for the student. The information that is presented is helpful for orientation purposes and knowledge about the neighborhood. In addition, each institute offers different practice dialogues in a scenario based learning model. This way students can practice basic dialogues, for example applying for a passport. Scenario based learning is especially suited for complex topics with high interaction or to practice qualification requirements [15].

Last but not least, students can see who is online in their neighborhood and can chat with each other. Chat rooms offer opportunities for interaction, which, as mentioned before, is important for second language acquisition [18]. Research in ESL/EFL classrooms has shown that students' participation in online chat groups was more equitable and students showed a preference for chat over face-to-face conversation [16]. The possibility of chatting in the virtual neighborhood provides interaction and topics to chat about.

## 4. DISCUSSION

In this article, an example of a blended educational program for immigrants is described to address the benefits that advanced learning technologies can bring to education. It shows that even students from a difficult target group, who have little or none experience with computers and just started learning the target language, can work enthusiastic with digital courseware. The technology moderates gaps of shame, insecurity and allows personal learning paths [12]. Evaluating the effectiveness of the digital courseware in general show advantages like improving quality, improving access to education especially for those whom it otherwise might be denied, reducing the cost of education and improving the cost-effectiveness of education [1][2]. Currently TiN is being used in immigrant education and a study is being executed how effective the course is. There are several requirements for an effective digital course, starting with the target audience. Every audience has different requirements because of their computer skills, learning experience, expectations, age, etc. which should be taken into account.

Secondly, the right technologies and didactics have to be applied for the required learning objective. In second language acquisition it is important to have e-learning that provides repeating possibilities. Asking the student to do the same exercise over and over is unproductive and de-motivating. Another example in TiN

is the usage of a game, which is applied to enhance motivation. In addition, the way virtual worlds are currently applied to learning is crucial to the effectiveness. Since the introduction and hype of Second Life ([www.secondlife.com](http://www.secondlife.com)), as an accessible 3D virtual world, many organizations, institute and publishers have built their own virtual worlds. What many of these worlds lack, is a reason to visit and interaction possibilities. In the virtual neighborhood of TiN this is solved, because it provides information, scenario-based learning modules and chatting possibilities.

Concluding, the upcoming advanced learning technologies such as gaming, virtual worlds, but wiki's and YouTube as well, should be analyzed before they are integrated in an educational programs. All new technologies have their advantages and disadvantages. For example, gaming cannot be seen as the ultimate solution of making educational content fun. The game can be a package that hides the dull content, but in better examples, gaming is used as a method for learning procedures, attitude change programs or behavioral changes. Game based learning allows more possibilities, again as package, but also as the motivational aspect of a bigger learning program. As been exemplified for gaming, this counts for all advanced learning technologies. The key lies within combining the advantages of technology with a user centered approach, as is done in TiN, to provide extra value for the student.

## 5. REFERENCES

- [1] Alexander, S. 2001. e-learning developments and experiences. *Education + Training* 43, 240-248
- [2] Bates, A.W. 1997. Restructuring the university for technological change. Paper presented at What Kind of University?, 18-20 June, The Carnegie Foundation for the Advancement of Teaching, London
- [3] Berman, L.F., Glass, T., Brissette, I., Seeman, T.E. 2000. From social integration to health: Durkheim in the new millennium. *Social science & medicine* 51, 843--857
- [4] Boulos, M.N.K., Hetherington, L., Wheeler, S. 2007. Second Life an overview of the potential of 3-D virtual worlds in medical and health education. *Health Information and Libraries Journal* 24, 233--45
- [5] Brett, P. 1997. A comparative study of the effect of the use of multimedia on listening comprehension. *System* 25 (1), 39--53
- [6] Caidi, N., Allard, D. 2005. Social inclusion of newcomers to Canada: An information problem? *Library & Information Science* 27, 302--324
- [7] Cakir I. 2006. Developing Cultural Awareness In Foreign Language Teaching. *Turkish Online Journal of Distance Education* 7 (3), 154--161
- [8] Carpay, J.A.M. 1975. *Onderwijs-leerpsychologie en leergangontwikkeling in het moderne vreemdetalenonderwijs*. Doct. Diss. R.U. Utrecht
- [9] Doman E. 2005. Current debates on SLA. *The Asian EFL Journal Quarterly* 7 (4), 131--143
- [10] Ellis, N.C. 2002. Frequency effects in language processing. A review with implications for theories of implicit and explicit language acquisition. *SSLA* 24, 143--188
- [11] Firth A., Wagner J. 1997. On Discourse, Communication, and (some) fundamental concepts in SLA research. *The Modern language Journal* 81 (3), 285--300
- [12] Ganusekaran, A., McNeil, R.D., Shaul, D. 2002. e-learning: research and applications. *Industrial and commercial training* 34 (2), 44-53
- [13] Gent, M.J., van Horssen, C., Mallee, L., Slotboom, S. 2008. *De participatieladder. Meetlat voor het participatiebudget*. Amsterdam
- [14] Jansen, R., van Berkel, m. 1999. *Succesvol toepassen van multimedia*. Kluwer
- [15] Jarrell, D., Freiermuth, M.R. 2005. The Motivational Power of Internet Chat. *RELC* 36 (1), 59--72
- [16] Kitao, S.K., Kitao, K. 1999. Using On-Line Chat in Language Teaching. *Proceedings of the Eighth Biennial CALL Conference held at the University of Exeter, September 9-11, 251--259*
- [17] Knowles, M.S. 1984. *Andragogy in Action*. Jossey-Bass, San Francisco
- [18] Krashen, S. 1981. *Second Language Acquisition and Second Language Learning*. Oxford: Pergamon
- [19] Lindstrom, M., Merlo, J., Ostergren, P. 2002. Individual and neighbourhood determinants of social participation and social capital: a multilevel analysis of the city of Malmo, Sweden. *Social Science & Medicine* (54) 1779--1791
- [20] Merriam, S.B. 2001. *Andragogy and Self-Directed Learning: Pillars of Adult Learning Theory*. *New Directions for Adult and Continuing Education* 89, 3--14
- [21] Prensky, M. 2001. *Digital Game-Based Learning*. New York: McGraw Hill.
- [22] Reynolds A.G., Lambert W.E. 1991. *Bilingualism, Multiculturalism, and Second Language Learning*. McGill University, New Jersey
- [23] Rosas, R., Nussbaum, M., Cumsille, P., Marianov, V., Correa, M., et al. 2003. Beyond Nintendo: design and assessment of educational video games for first and second grade students. *Computers & Education* 40, 71--94
- [24] Romiszowski, A. J. (1992). Developing interactive multimedia courseware and networks. In *Promaco Conventions (Ed.), Proceedings of the International Interactive Multimedia Symposium, 17-46*. Perth, Western Australia, 27-31 January. Promaco Conventions. <http://www.aset.org.au/confs/iims/1992/romiszowski1.html>
- [25] Vaugh, T. 2004. *Multimedia making it work*. McGraw-Hill Professional
- [26] VROM 2007. *Deltaplan inburgering: Vaste voet in Nederland*. <http://www.vrom.nl/docs/deltaplan-inburgering.pdf>
- [27] Yee, N., Bailenson, J.N., Urbanek, M., Chang, F., Merget, D. 2007. The unbearable likeness of being digital: the persistence of nonverbal social norms in online virtual environments. *CyberPsychology & Behavior* 10, 115--21